

A Service of



Leibniz-Informationszentrum Wirtschaft Leibniz Information Centre

Bohateret, Valentin Mihai; Brumă, Ioan Sebastian

Conference Paper

The future of the Romanian rural household from the perspective of agricultural censuses

Provided in Cooperation with:

The Research Institute for Agriculture Economy and Rural Development (ICEADR), Bucharest

Suggested Citation: Bohatereţ, Valentin Mihai; Brumă, Ioan Sebastian (2015): The future of the Romanian rural household from the perspective of agricultural censuses, In: Agrarian Economy and Rural Development - Realities and Perspectives for Romania. 6th Edition of the International Symposium, November 2015, Bucharest, The Research Institute for Agricultural Economy and Rural Development (ICEADR), Bucharest, pp. 54-60

This Version is available at: https://hdl.handle.net/10419/163279

${\bf Standard\text{-}Nutzungsbedingungen:}$

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



THE FUTURE OF THE ROMANIAN RURAL HOUSEHOLD FROM THE PERSPECTIVE OF AGRICULTURAL CENSUSES

BOHATERET VALENTIN MIHAI¹ BRUMĂ IOAN SEBASTIAN²

Abstract: The development of agriculture in nowadays circumstances cannot be merely assessed from the perspective of agriculture as a main branch of national economy, but further from a social point of view which is highly significant as it represents the traditional small farm households which provide the basic necessaries for the rural population as well as the usability implication of over 55% from the agricultural area of the country. On the whole, by agricultural exploitation there is the general tendency of considering its commercial aspect only, perfectly justifiable in the case of agricultural exploitations with a legal, juridical character, but there is also to be regarded the social aspect of agricultural exploitation without a juridical status, which is largely representative for the small farm households. In the period of time between the 2 General Censuses (2002 and 2010) the agricultural exploitations without a legal, juridical status diminshed by 13.6%, while the agricultural area used diminshed by 3.3% only, leaving over 7.5 million agricultural area as responsability for these exploitations.

Key words: rural/ small farm household, agricultural exploitation without a legal/ juridical status, the size of the agricultural exploitation, the agricultural area used

INTRODUCTION

The reconfiguration of the Romanian rural space after December 1989 has engaged all the aspects of the economic and social life based on profound changes in the juridical system, both technically and actively. As a natural consequence of it, in the past quarter century the vernacular village has been significally transformed into a new world still clinging to many unresolved issues from the past.

The structures of land ownership and agricultural exploitation have changed significantly, the land market has crystalised, the commercial flows of agri-food products have been set, the Romanian rural institutional system has also changed consistently and the private business background was reborn and has been developing extensively in the past quarter century. There are constituent elements specific to a democratic society based on a free economy determined by a market economy.

Although the premises of a high-performance agriculture have been created (such as one determined by competition and profitability) and the Romanian village has undergone great changes in terms of updating the basic infrastructures and registering a spectacular rise of new private houses or restoration of the old ones, on the whole, the agriculture has been left behind, at the parameters of extensive development with medium or low productivity rates on hectare or animal, of low efficiency, having an overall character of subsistence farming, aggravated by the highlyprogressive aging of the rural population, the lack of diversification of the non-agricultural activities, the scarcity of clear policies and strategies for a a general and long-lasting/ mediumlasting development of the Romanian rural environment.

Under the circumstances, the traditional rural household has regained its lands, but has an aged workpower, lackinging in mechanized tools of farming, having insufficient funds or asssitance from government and a market poorly adjusted to their aspirations. It is the Cinderella of the Romanian agriculture, in spite of the fact that according to the General Agricultural Census of 2010 99.2% of the total of the agricultural holdings in Romania, meaning 52.9% of the total agricultural area of the country. The future development of agriculture in Romania cannot ignore the distinctiveness of the traditional rural household which, if modernized, supported and interested in a business environment close to its characteristics, may very well represent the binomial of the

¹ Bohateret Valentin-Mihai, Chief Scientific Researcher, Romanian Academy, Iași branch, ICES "Gh. Zane", bvmarfi@yahoo.com

² Brumă Ioan Sebastian, Scientific Researcher, Romanian Academy, Iași branch, ICES "Gh. Zane", sebastianbruma@ices.acadiasi.ro

commercial agriculture and subsitence farming based on the rebalancing of the relation between the agricultural exploitations having a legal, juridical status and those without it, which cannot represent competition, but may be complementary.

MATERIALS AND METHODS

The research is based on the statistics data provided by the General Agricultural Censuses of 2002 and 2010 in Romania. Data at national level have been selectively undertaken from the first section of the censuses regarding the agricultural exploitation and using what some indicatives define as their number, the total and used agricultural area, the legal status of the holdings, groups on classes determined by the size of the lands and the ownership type of the agricultural lands. The main method employed here is that of of comparative analysis of the two data sources, considering the relative and absolute deviations in relation to the reference year 2010. The results express the courses which can be employed in projecting the future of the rural household in Romania in the near or further future.

RESULTS AND DISCUSSIONS

The study on the evolution of the agricultural holdings in Romania in view of the two general agricultural censuses (2002 and 2010) highlights several significant mutations (table 1) of which we would like to mention the following:

- the total number of the agricultural holdings has dropped to 14.3%, circumstances where the agricultural holdings without a legal status have gone down to 15.5%, while the number of the agricultural holdings having a juridical status has increased by 34.8%;
- the overwhelming weight is represented by the agricultural holdings without a juridical status which have decreased by 0.3% only from 99.5% to 99.2%, while the dominance of the agricultural holdings with a juridical status has incressed from 0.5% to 0.8% out of the total of agricultural holdings;
- considering the total of the agricultural area, the holdings without a juridical status covered 52.9% from the total agricultural area in Romania in 2010, having a decline of 0.9% compared to 2002, while the agricultural holdings with a juridical status increased by 0.9%, summing up 47.1% in 2010;
- the agricultural area used on the total of holdings increased, at a national level, from 1,777.3 thousand hectares in 2002 to 2,388.9 thousand hectares in 2010; the area used by the agricultural holdings without a juridical status increased from 745.8 thousand ha to 857.8 thousand ha, while those having a juridical status increased from 1,031.5 thousand ha to 1,531.1 thousand ha.

From the first batch of indicatives we could determine the following tendencies:

- there is a tendency of decline in the number of agricultural holdings without a juridical status having an annual medium rate of 1.94%, while the agricultural holdings with a juridical status are increasing by 4.35% annually (the medium rate of growth);
- regarding the matter of the total agricultural area and agricultural area used, the changes have no significant relevance. Nevertheless, there has been noted an expansion of the agricultural area unutilized;
- together, the two tendencies depict the increase of the total agricultural area on exploitation from 3.50 ha to 4.08 ha having differentiations between the agricultural holdings without a juridical status with rises from 1.89 to 2.18 ha and those with a juridical status, having a tendency to decline from 319.54 ha to 241.42 ha (medium area).

The agricultural holdings without a juridical status represent the axis of the Romanian rural society because they partially overlap with rural population households. Therefore, in 2010, following the General Agricultural Census there were 3,814.6 thousand agricultural holdings without juridical status, while the 2011 Census of Population and Dwellings in Romania registered 3,262.4 households of the population, with or without children, which summed up 9,232.2

inhabitants, on average 2,830 inhabitants for 1,000 households of the population, or a total population of 2,420 for 1,000 agricultural holdings without a juridical status.

Table 1: The evolution of the proportion between the agricultural holdings without a juridical status and those with a juridical status (2002 - 2010)

Specifications	GA	'C	Structu	re (%)	Changes	
Specifications	2002	2010	2002	2010	(%) 2002/2010	
Total of agricultural exploitations (thousands):	4,484.9	3,845.2	100.0	100.0	85.7	
- without juridical status	4,462.2	3,814.6	99.5	99.2	85.5	
- with juridical status	22.7	30.6	0.5	0.8	134.8	
Total Area (thousand, ha):	15,708.0	15,695.0	100.0	100.0	99.9	
- without juridical status	8,454.5	8,307.4	53.8	52.9	98.3	
- with juridical status	7,253.5	7,387.6	46.2	47.1	101.8	
Agricultural Area utilized (thousands ha):	13,930.7	13,306.1	100.0	100.0	95.5	
- without juridical status	7,708.7	7,449.6	55.3	56.0	96.7	
- with juridical status	6,222.0	5,856.5	44.7	44.0	94.1	
Average Agricultural Area (ha)						
Total Area, total of holdings:	3.50	4.08	-	-	116.6	
- without juridical status	1.89	2.18	-	-	115.3	
- with juridical status	319.54	241.42	-	-	75.6	
Agricultural Area utilized, total of holdings: - without juridical status	3.11	3.46	-	-	111.3	
- with juridical status	1.73	1.95	-	-	112.7	
	274.10	191.39	-	-	69.8	

Source: our calculi based on the data provided by the two General Agricultural Censuses from 2002 and 2010

Thus we have found out that the exceptional social dimension of the agricultural exploitation without juridical status is mainly responsabile for the maintenance of rural households and rural population in the Romanian rural environment.

The high degree of fragmentation of the agricultural holdings without juridical status as index of a dissolving land ownership, constantly under the pressure of fragmentation due to succession debates or associations, as well as the high rate of the subsistence farming (under 2 ha) – 69.81% going up to 71.26%, from 2002 to 2010, in relation to the opposite process of decline in the total agricultural area utilized from 24.15% to 21.25% shows an unfortunate poverty rise of approximately 6.5 million inhabitants in the rural area.

There are multiple tendencies regarding the evolution of the agricultural holdings' structures without juridical status, taking into account the size categories of the total agricultural area (table 2).

There is a slight increase of the holdings area under 0.5 ha by 7.2% in 8 years, a clear decrease of the areas under 2 ha by 13.5% and between 2 and 10 ha by 19.5%, while the holdings between 10 and 50 ha increase, as area, by 42.0% and those over 50 ha increase by 107.1%. Thus we can fairly assess the following tendencies:

- consolitation of the subsistence farming under 0.5 ha;
- decrease of the interest in agriculture within the segment 0.5 10 ha;
- high increase of the interest in agriculture in the case of agricultural holdings without juridical status and over 20 ha; these categories have enlarged the total agricultural area by 977 thousand ha between 2002 and 2010.

It is quite interesting the change of opinion about the consolidation of the agricultural exploitation without juridical status during 2002 - 2010, according to the ownership type of the agricultural areas utilized (Addendum 1).

Therefore it turns out that agricultural area utilized and owned declines from 78.53% to 40.13%, while the area on lease increses from 1.08% to 45.25%. These few figures show the tendency of passing the agricultural area from the owner (small farm household) to the user (agricultural exploitation without a juridical status) by leasing or, rarely, by concession or other ownership legal forms regarding the agricultural area utilized. The most significant changes appear

in the cases of leasing for the agricultural holdings between 10 and 50 ha, where the increse is of 22.68%, but mostly in the category over 50 ha, where the increase is of 35.10%. At the same time there are also major changes in the case of ponderence of the utilized agricultural area owned: the increases are of 0.15% for the category under 2 ha and of 23.46% for the category above 50 ha and decreases of 0.57% for the category 2-10 ha and of 5.27% for the category 10-50 ha.

Table 2. The Evolution of the agricultural holdings without a juridical status and the total agricultural area structurized on size categories of the total area

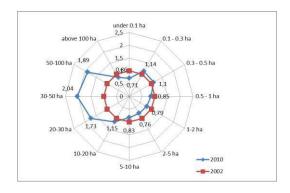
	No. ho	oldings	Structure		Ar	ea	Struc	cture	Change of	
Size category	thous	sands	%	, D	thousa	nds ha	9/	6	area (%)	
	2002	2010	2002 2010		2002	2010	2002	2010	2010/2002	
under 0,5 ha	1,502.2	1,363.7	33.67	35.75	269.2	288.5	3.18	3.47	107.2	
0,5 – 1 ha	716.4	630.7	16.06	16.53	500.3	442.9	5.92	5.33	88.5	
1 – 2 ha	896.3	723.9	20.09	18.98	1,272.4	1,034.1	15.05	12.45	81.3	
Total under 2 ha	3,115.0	2,718.3	69.81	71.26	2,041.9	1,765.5	24.15	21.25	86.5	
2 – 5 ha	1,025.1	795.3	22.97	20.85	3,159.8	2,463.1	37.37	29.65	78.0	
5 – 10 ha	260.4	219.9	5.84	5.76	1,719.4	1,466.8	20.34	17.66	85.3	
Total 2-10 ha	1,285.4	1,015.2	28.81	26.61	4,879.2	3,929.9	57.71	47.31	80.5	
10 – 20 ha	47.3	53.1	1.06	1.39	592.2	693.9	7.00	8.35	117.2	
20 – 30 ha	5.8	10.1	0.13	0.27	136.7	242.3	1.62	2.92	177.3	
30 – 50 ha	3.6	7.6	0.08	0.20	136.2	292.0	1.61	3.51	214.4	
Total 10-50 ha	56.7	70.8	1.27	1.86	865.1	1,228.2	10.23	14.78	142.0	
50 – 100 ha	2.9	5.9	0.06	0.16	187.6	404.4	2.22	4.87	215.5	
Over 100 ha	2.3	4.4	0.05	0.12	480.6	979.5	5.68	11.79	203.8	
Total over 50 ha	5.1	10.3	0.12	0.27	668.2	1,383.9	7.90	16.66	207.1	
TOTAL	4,462.2	3,814.6	100.00	100.00	8,454.4	8,307.5	100.00	100.00	98.3	

Source: our calculi based on the data collected from the two General Agricultural Censuses from 2002 and 2010

Thus we have learnt that there is a consolidation tendency of the two fundamental components of the agricultural holdings without juridical status, namely the subsistence exploitations concentrate on their social component, while the exploitations over 10 ha aim at the commercial agriculture. It takes shape the existence of an exploitation group (between 2 and 10 ha) which is not certain about their development strategy in future, standing out by a decline tendency that highlights a more energetic activation of the land market.

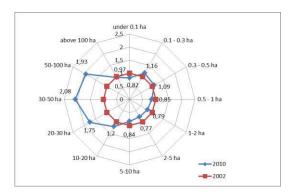
The evolution tendencies of the number of agricultural holdings without a juridical status (Chart 1) and of the agricultural areas utilized (Chart 2) are similar, registering profound changes of increase in the case of the agricultural holdings over 10 ha and decreases in the case of the category under 2 ha, except for the category 0.1-0.5 ha, were there are increase tendencies both as number of holdings and as agricultural area utilized.

If the annual increase rates of the total medium agricultural area regarding an agricultural exploitation without juridical status (between 2002 and 2010) are to remain the same, then the total medium agricultural area of an agricultural holdings without juridical status in Romania will double, based on the same scenario, in 70.9 years reaching 2.90 ha.



Source: our analyses and interpretations based on the data collected from the two General Agricultural Censues from 2002 and 2010

Chart 1. The evolution of the agricultural exploitations without juridical status in Romania between 2002-2010



Source: our analyses and interpretations based on the data collected from the two General Agricultural Censues from 2002 and 2010

Chart 2. The evolution of the agricultural areas utilized in the agricultural holdings without juridical status in Romania between 2002-2010

Obviously, this scenario is extremely pessimistic, the future growth rates of the total agricultural area and utilized for an agricultural holdings without juridical status will accelerate due to the following facts:

- the accelerating decrease of the active population in the rural environment;
- the development of the non-agricultural activities;
- the increasing pressure of the agricultural holdings with juridical status by taking over the lands owned by the agricultural holdings without juridical status, regardless of their type of ownership;
- the professionalization of the agriculture by the significant increase of the commercial agriculture to the disadvantage of the agricultural areas owned by the agricultural holdings of subsistence which will decrease by approximately 3 quarters;
 - the intensification of the land market.

These few considerations allow us to see, from a moderate point of view, the possibility of doubling the medium area of the agricultural holdings without juridical status in about 30 years or, the optimistic view, in about 15 years as the annual growth rates will be of 0.1448 ha/year or of 0.0724 ha/year (the moderate view).

Thus we have learnt that the agricultural holdings without juridical status will coexist with the agricultural holdings with juridical status for quite a long time, which implies planning a specific strategy of development and consolidation addressed to the agricultural holdings without juridical status, having as central objective the agricultural exploitation of subsistence or subsistence farming.

CONCLUSIONS

The study regarding the future of the small farm household in Romania from the perspective of the General Agricultural Censuses from 2002 and 2010 outlines a few value judgments such as:

- the total agricultural areas and agricultural areas utilized are constantly shifting based on the juridical status of the exploitation, the exploitation structures on size categories and the type of ownership of the agricultural areas utilized;
- the tendencies convey a slow change of the number and total agricultural area and agricultural areas utilized without juridical status, meaning a consolidation of the subsistence farming from the category under 0.5 ha and over 10 ha, while the categories between 0.5 10 ha face a slight downfall;
- the agricultural holdings without juridical status are mainly the households of the rural population which, generally are the same with the small farm households, the major difference constituting the non-agricultural households or those limited to out-urban habitation functions;
- the social function of the agricultural exploitation without juridical status is predominantly standing out fin the case of the agricultural holdings of subsistence (under 2 hectares), especially for the category 0.1 0.5 ha;
- the commercial function distinguishes mainly in the case of the agricultural holdings without juridical status which uses areas over 10 hectares and where the consolidation phenomenom is much more visible;
- the future of the agricultural holdings without juridical status can take shape by the growth rate of the total medium agricultural area on exploitation which offers its doubling as compared to 2010, following scenarios such as: doubling the medium area of exploitation in 60 years (the pessimistic scenario), in 30 years (the moderate scenario) and in 15 years (the optimistic scenario);
- the small farm household in Romania will have a very long history, which will overlap with the existence of the Romanian state, but it will be continually changing and modernizing and thus securing the perennity of the Romanian village through tradition and culture, as well as the social prosperity through creating an efficient and high-performance microeconomy.

The vernacular village will live as long as the small farm households live, otherwise the village will turn into localities of urban type, mainly based on agricultural businesses or non-agricultural ones in a corporate system. The rural households has the future challenging task of maintaining and preserving the authentic national values and traditional inheritance of the rural environment under the pressure of modernization and optimization of the agricultural activities made in the spirit of tradition while pursuing profitability.

BIBLIOGRAPHY

Bohatereţ V. M., Brumă I. S.. (2014). Regional Mutations in the Structure of Agricultural Exploitations in Romania between 2002-2010 in The perspectives of Agriculture and Rural Development in Light of the New Commune Agricultural Policy 2014 – 2020, Academia Română publishing house, Bucureşti

- *** 2004. The General Agricultural Census 2002, Vol. 1. General Data, INS, București.
- *** 2008. The Regulation CE 1166/2008 of the European Parliament and Council regarding the structural investigations in agriculture and investigations about the methods of agricultural production.
 - *** 2012 The General Agricultural Census 2010, Vol. 1. Results at national level, INS, București.
- *** 2013. The Census of the Population and Dwellings, 20th of October 2011, Vol. 4, Buildings, Dwellings, Households, INS, Bucureşti.

Addendum 1. The evolution of the agricultural exploitations without juridical status and of the agricultural areas utilized based on size categories of the agricultural area utilized, type of ownership of the agricultural areas utilized (2002 - 2010) (%)

					inculturar areas utilized (2002 - 20				r i i				0.3	
Size Categories	total, d.c prop				leasing		association		free use		Other ways			
Size Categories	2002	2010	2002	2010	2002	2010	2002	2010	2002	2010	2002	2010	2002	2010
	number													
Under 0,5 ha	100.00	100.00	93.80	94.36	0.40	0.42	0.14	0.30	0.25	0.38	0.62	3.30	4.79	1.25
0,5 – 1 ha	100.00	100.00	91.30	90.74	0.04	0.25	0.09	0.69	0.40	0.87	0.64	5.58	7.53	1.86
1 – 2 ha	100.00	100.00	89.65	89.32	0.01	0.21	0.07	1.16	0.30	1.03	0.47	6.09	9.49	2.19
Total under 2 ha	100.00	100.00	92.03	92.18	0.20	0.32	0.11	0.62	0.30	0.66	0.58	4.57	6.77	1.64
2 – 5 ha	100.00	100.00	87.77	87.62	0.01	0.19	0.05	1.97	0.19	1.33	0.33	6.21	11.66	2.68
5 – 10 ha	100.00	100.00	85.99	83.85	0.01	0.32	0.08	4.62	0.13	2.03	0.21	5.89	13.57	3.28
Total 2-10 ha	100.00	100.00	87.41	86.84	0.01	0.21	0.05	2.52	0.18	1.48	0.30	6.15	12.05	2.81
10 – 20 ha	100.00	100.00	76.61	71.64	0.03	1.21	0.34	12.25	0.25	3.54	0.13	6.45	22.64	4.91
20 – 30 ha	100.00	100.00	50.41	56.9	0.09	3.47	1.61	21.69	0.80	5.02	0.12	6.29	46.98	6.64
30 – 50 ha	100.00	100.00	34.62	51.01	0.19	4.71	2.92	26.14	1.49	5.16	0.33	5.96	60.44	7.03
Total 10-50 ha	100.00	100.00	71.25	65.98	0.05	2.13	0.64	15.97	0.38	4.04	0.14	6.35	27.54	5.52
50 – 100 ha	100.00	100.00	26.87	46.89	0.38	5.05	5.91	31.77	2.78	4.46	0.17	4.47	63.89	7.37
Over 100 ha	100.00	100.00	8.97	42.51	0.57	4.61	10.78	36.94	2.52	4.63	0.13	3.42	77.03	7.89
Total over 50 ha	100.00	100.00	18.98	44.97	0.47	4.85	8.05	34.04	2.66	4.53	0.16	4.01	69.68	7.60
TOTAL	100.00	100.00	90.35	90.05	0.15	0.35	0.11	1.58	0.27	0.96	0.50	5.01	8.63	2.05
							are	a						
Under 0,5 ha	100.00	100.00	94.35	95.64	0.13	1.22	0.11	0.45	0.31	0.19	0.57	1.55	4.53	0.95
0.5 - 1 ha	100.00	100.00	91.27	95.59	0.03	1.90	0.08	0.87	0.36	0.04	0.59	0.87	7.67	0.73
1 – 2 ha	100.00	100.00	89.45	94.94	0.01	1.36	0.06	1.97	0.27	0.17	0.45	1.02	9.76	0.54
Total under 2 ha	100.00	100.00	90.51	95.22	0.03	1.47	0.07	1.44	0.30	0.14	0.50	1.07	8.59	0.66
2 – 5 ha	100.00	100.00	87.15	93.40	0.01	1.29	0.05	3.16	0.19	0.46	0.31	0.88	12.3	0.8
5 – 10 ha	100.00	100.00	84.52	91.76	0.01	1.42	0.10	5.04	0.15	0.18	0.21	0.73	15.01	0.87
Total 2-10 ha	100.00	100.00	86.28	92.36	0.01	1.37	0.06	4.35	0.18	0.28	0.27	0.79	13.19	0.85
10 - 20 ha	100.00	100.00	69.75	81.92	0.03	2.07	0.46	12.08	0.34	0.62	0.12	1.57	29.29	1.73
20 - 30 ha	100.00	100.00	45.03	68.22	0.10	2.16	1.84	24.4	0.85	0.93	0.15	1.91	52.04	2.38
30 - 50 ha	100.00	100.00	32.31	57.71	0.17	4.78	3.19	31.16	1.59	0.92	0.29	1.73	62.44	3.69
Total 10-50 ha	100.00	100.00	58.58	67.41	0.07	3.35	1.20	23.88	0.66	0.83	0.16	1.73	39.33	2.8
50 – 100 ha	100.00	100.00	22.76	46.22	0.40	4.49	6.58	41.71	2.93	0.83	0.17	1.85	67.16	4.89
Over100 ha	100.00	100.00	7.61	39.17	0.81	5.65	12.37	45.98	2.55	1.00	0.12	1.35	76.54	6.86
Total over 50 ha	100.00	100.00	11.79	39.34	0.70	5.62	10.77	45.87	2.65	1.00	0.14	1.36	73.95	6.81
TOTAL	100.00	100.00	78.53	40.13	0.08	5.55	1.08	45.25	0.46	0.99	0.31	1.36	19.54	6.71

Source: our analyses and interpretations based on the data collected from the two General Agricultural Censuses from 2002 and 2010